

### Abstract of the Disclosure

The present invention relates to a preparation method for low-density polyurethane foam excelling in the flame retardance and the dimensional stability, wherein rigid polyurethane foam having the average value for the ratio of lengthwise direction diameter/cross direction diameter of cells being 1.0 to 1.4 and the density of 20 to 40 kg/m<sup>3</sup> is prepared by combining, as blowing agent, carbon dioxide generated in the reaction between water and polyisocyanate and carbon dioxide under supercritical state, subcritical state or liquid state, and by adding said water and said carbon dioxide under liquid state into said polyol component prior to mixing the polyisocyanate component and the polyol component, and to rigid polyurethane foam obtained by said method.